Figure 1: Experimental procedure for the *in vitro* selection.

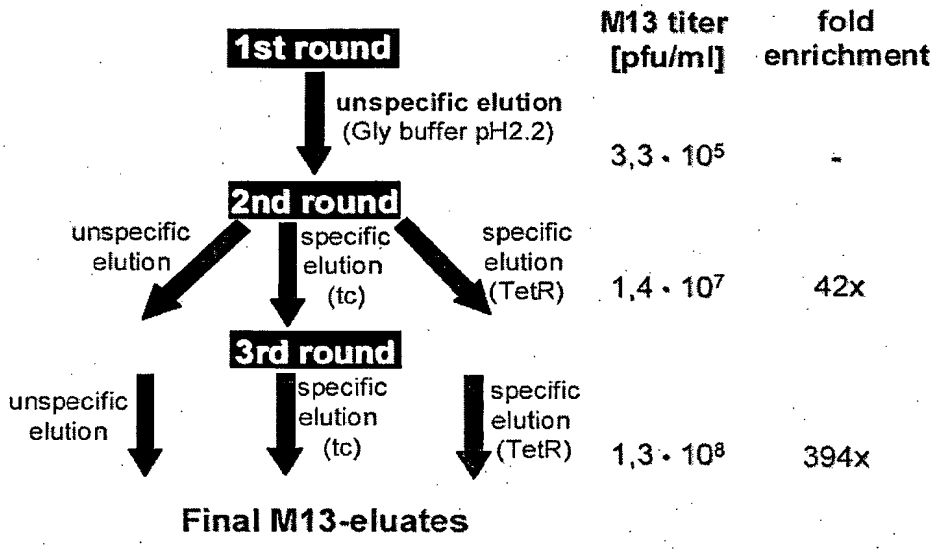


Figure 2: Example for *in vitro* selected sequences.

- Unspecific elution (Gly buffer, pH 2.2)

pep1	Trp	His	Gly	Ala	Ile	Leu	Gly	Ser	Ala	Arg	Ala	Gln
pep2	Leu	Pro	Ser	Tyr	Met	Leu	His	Leu	Trp	Ser	Pro	His
pep3	Ala	His	Tyr	Ser	Leu	Tyr	Trp	Pro	Met	Ala	Thr	Phe
pep4	Tyr	His	Asn	Leu	Tyr	Gly	Leu	Pro	Leu	Gly	Pro	Trp
pep5	Trp	His	Gln	Thr	Tyr	Thr	Ser	Ser	Leu	Trp	Glu	Ser

- Specific elution (TetR, 4μM)

pep1	Trp	Thr	Trp	Asn	Ala	Tyr	Ala	Phe	Ala	Ala	Pro	Ser
pep2	Trp	His	Ser	Ser	Phe	Asn	Met	Phe	Ala	Tyr	Pro	Met
pep3	Trp	His	Leu	Pro	Leu	Ser	Trp	Thr	Thr	Arg	Leu	Pro
pep4	Trp	His	Thr	Pro	Ile	Ser	Leu	Leu	Lys	Gln	Val	Arg
pep5	Trp	His	Trp	Thr	Phe	Ser	Ser	Pro	Leu	Met	Gln	Thr

Figure 3: Characterisation of TetR-phage binding by ELISA.

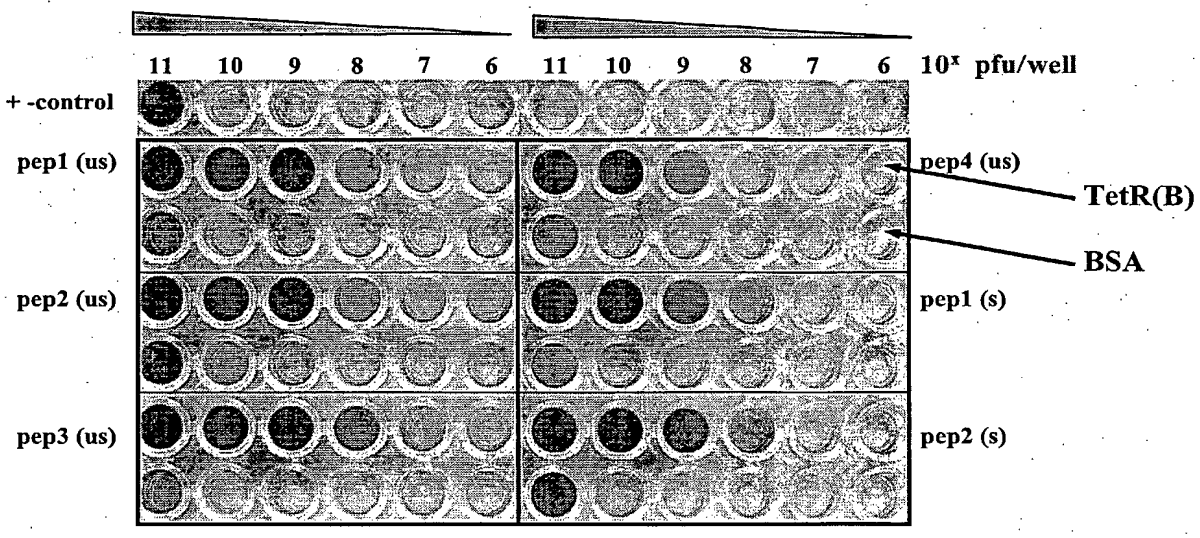


Figure 4: Design of the peptide expressing construct.

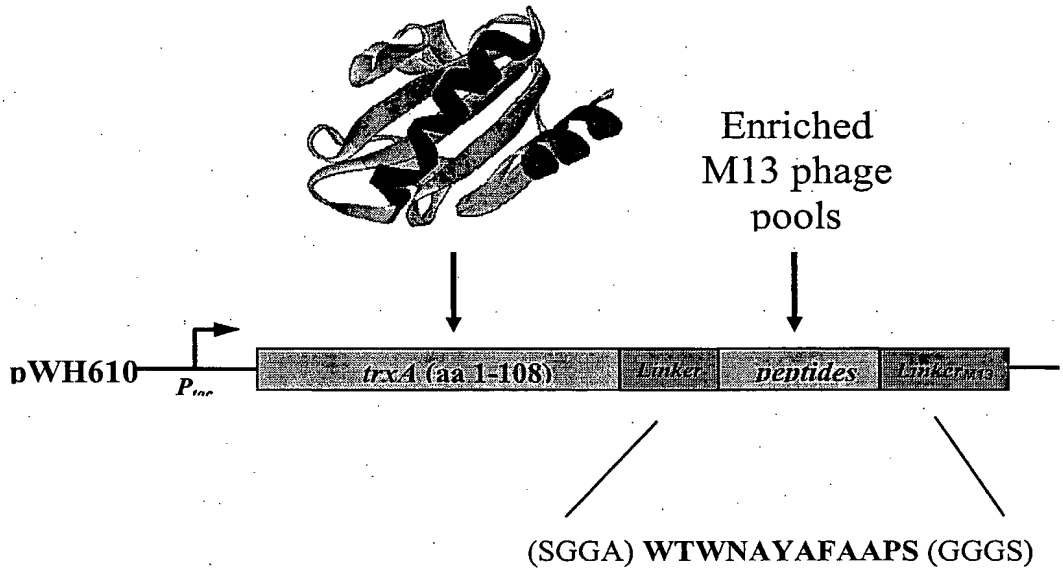


Figure 5: Setup of the *in vivo* screening system.

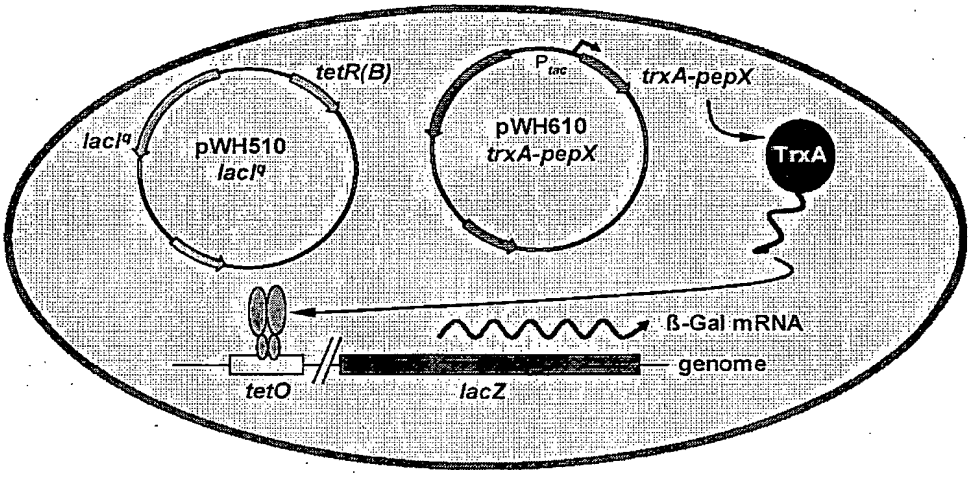
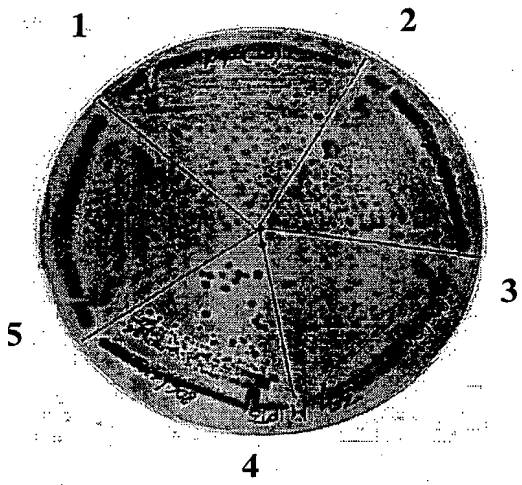


Figure 6: McConkey plate.



box	Plasmid I* encoding	Plasmid II** encoding	ß-Gal activity
1	TetR(B)	TrxA-pepBs1	+
2	TetR(B)	TrxA-pepBs1	+
3	TetR(B)	-	-
4	-	-	+ (100%)
5	TetR(B)	TrxA	-

* pWH510*lacI*^{q} for TetR(B), pWH1200 (Altschmied et al., 1988)
** pWH610 for TrxA/TrxA-pepBs1, pWH806 (Wissmann et al., 1991)
"+" = induced (yellow colonies)
"-" = uninduced (colorless colonies)

Figure 7: LacZ assay for the TetR-inducing fusion protein TrxA-pepBs1.

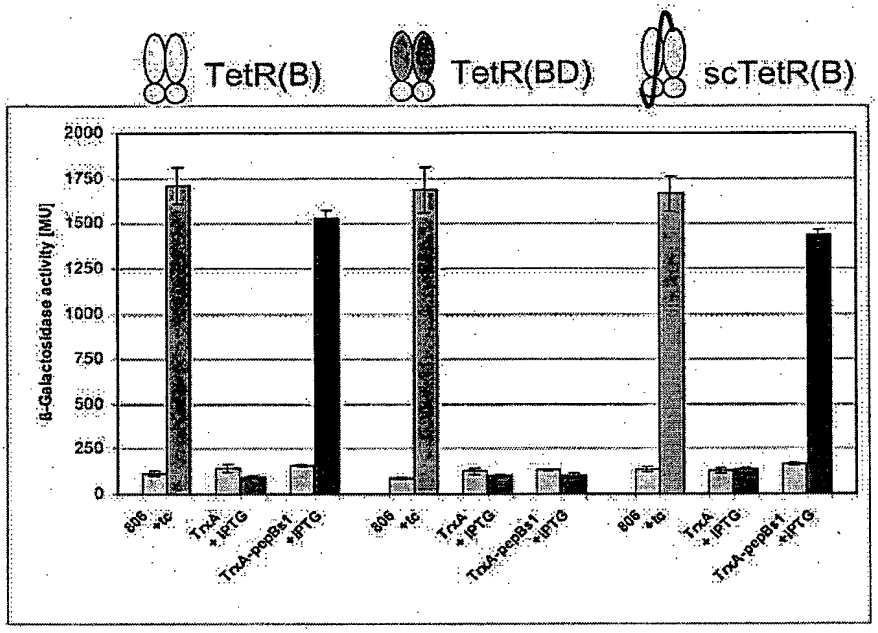


Figure 8: Identification of the region of interaction between TetR and TrxA-pepBs1 by in *vivo* epitope mapping.

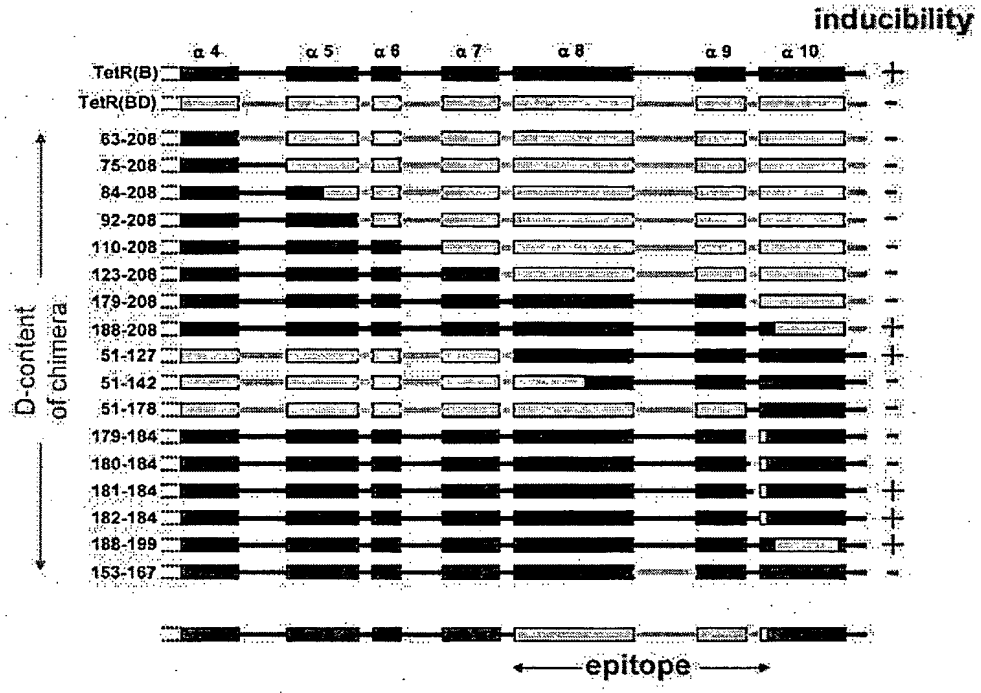


Figure 9: Structure of TetR.

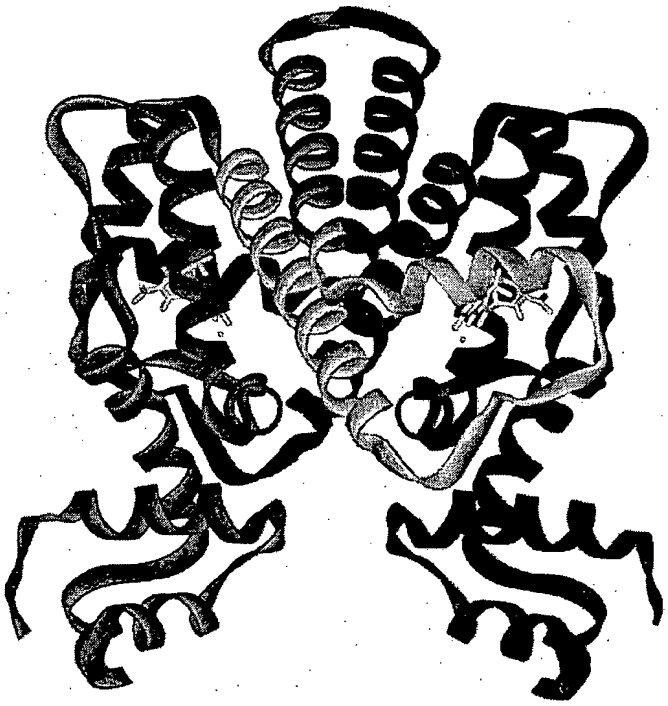


Figure 10: Expression of the peptide correlates with induction of TetR.

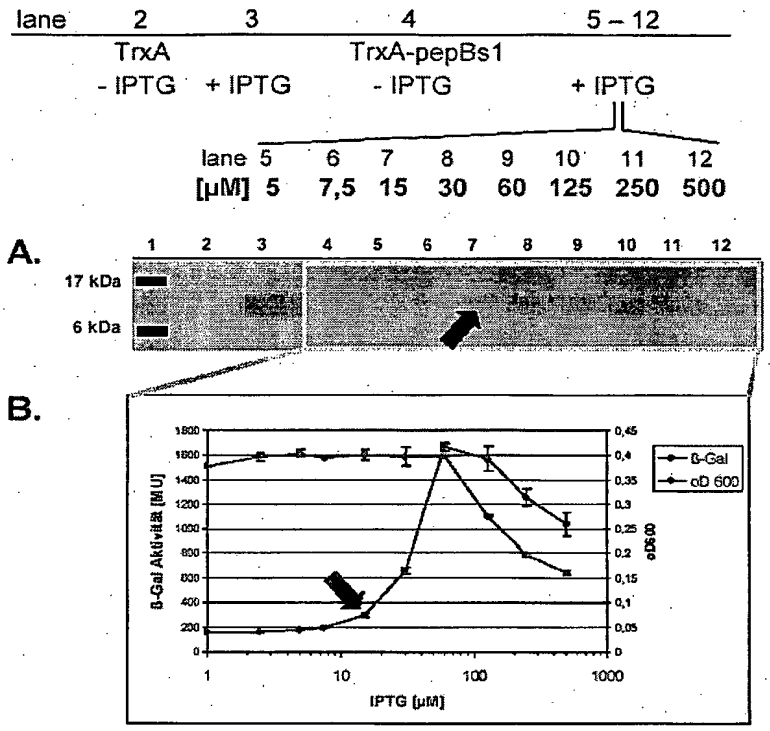


Figure 11: ***In vivo*** **characterisation of non-inducible TetR mutants.**

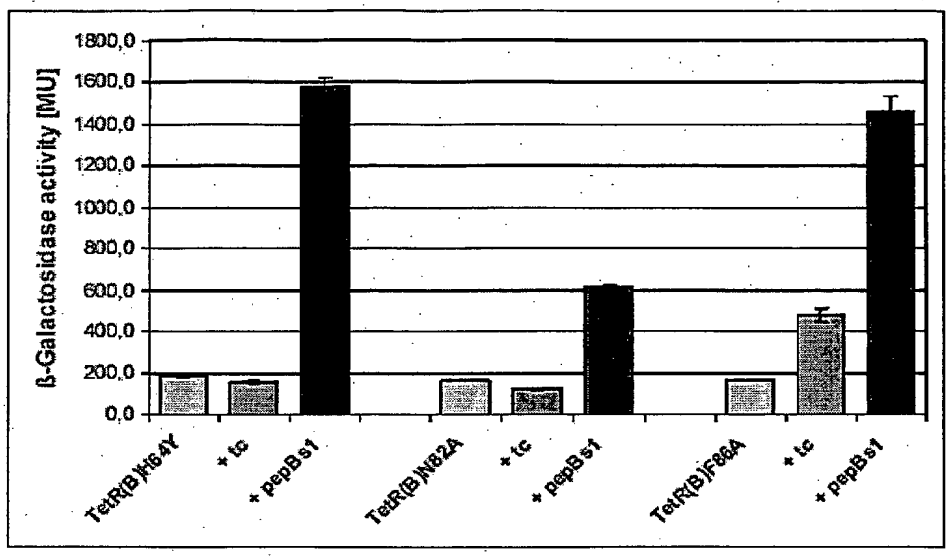


Figure 12: Position of the amino acids H64, N82 and F86 relative to tetracycline and the interaction epitope.

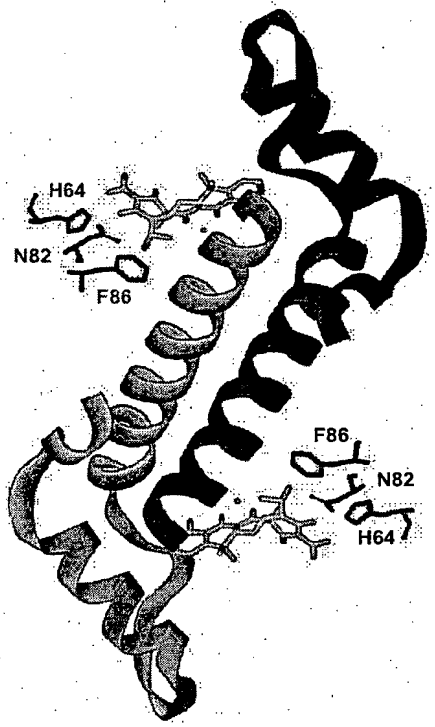


Figure 13: Amino acids contacting tc.

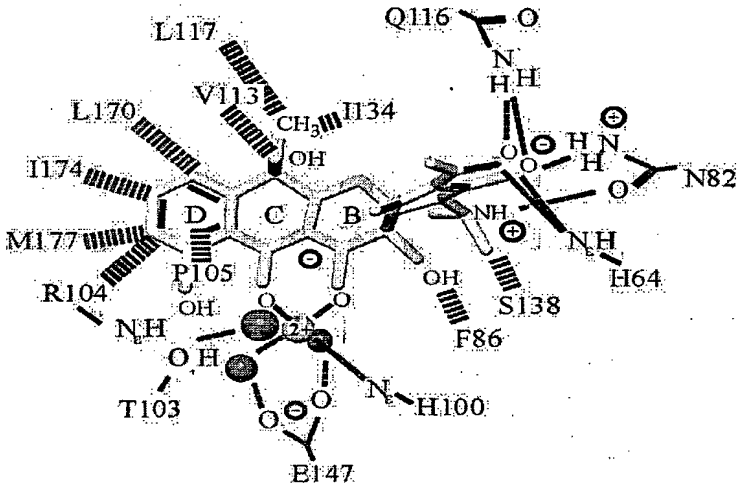


Figure 14: ***In vivo*** **characterisation of TetR inducibility by TrxA fusion proteins.**

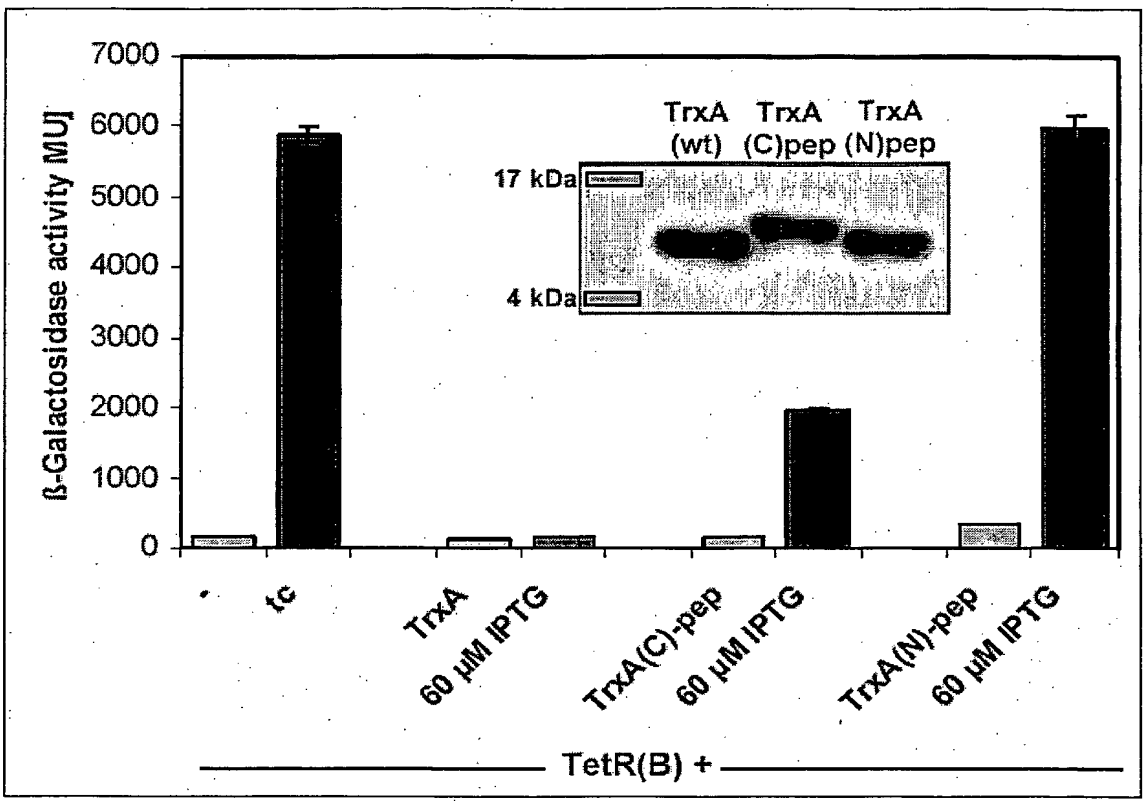


Figure 15: Correlation between the protein level and induction of TetR(B).

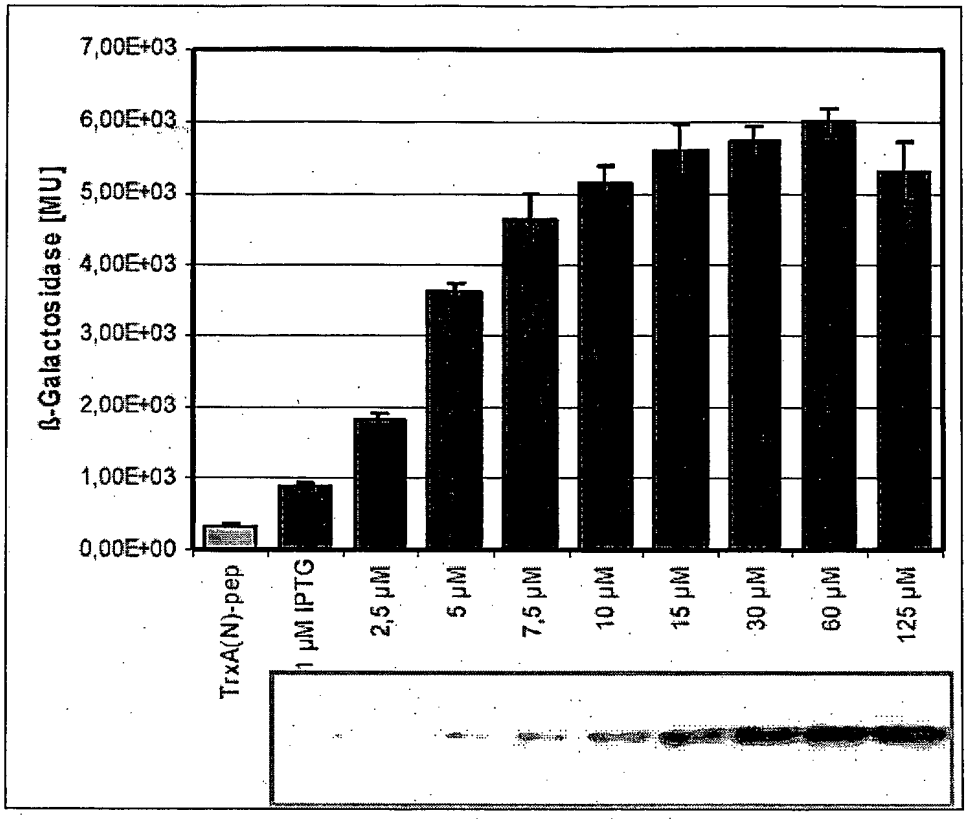


Figure 16: Comparison of a low and high TetR-expressing system.

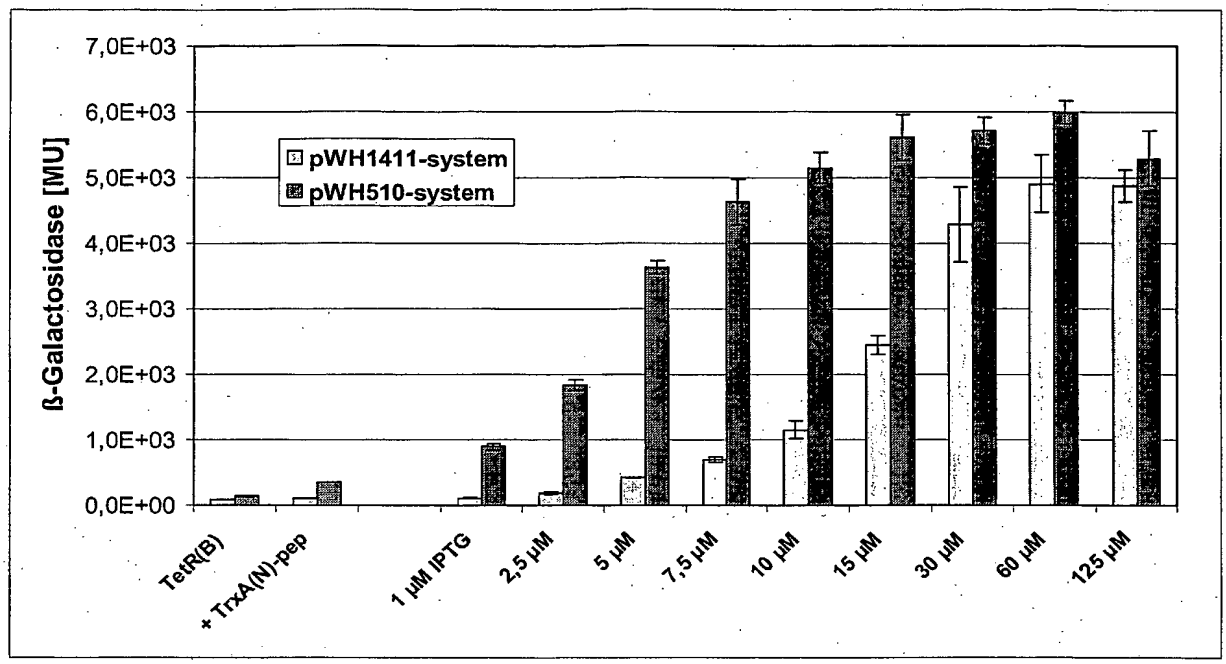


Figure 17: Comparison of TetR(B) induction by C- and N-terminal TrxA-peptide fusions.

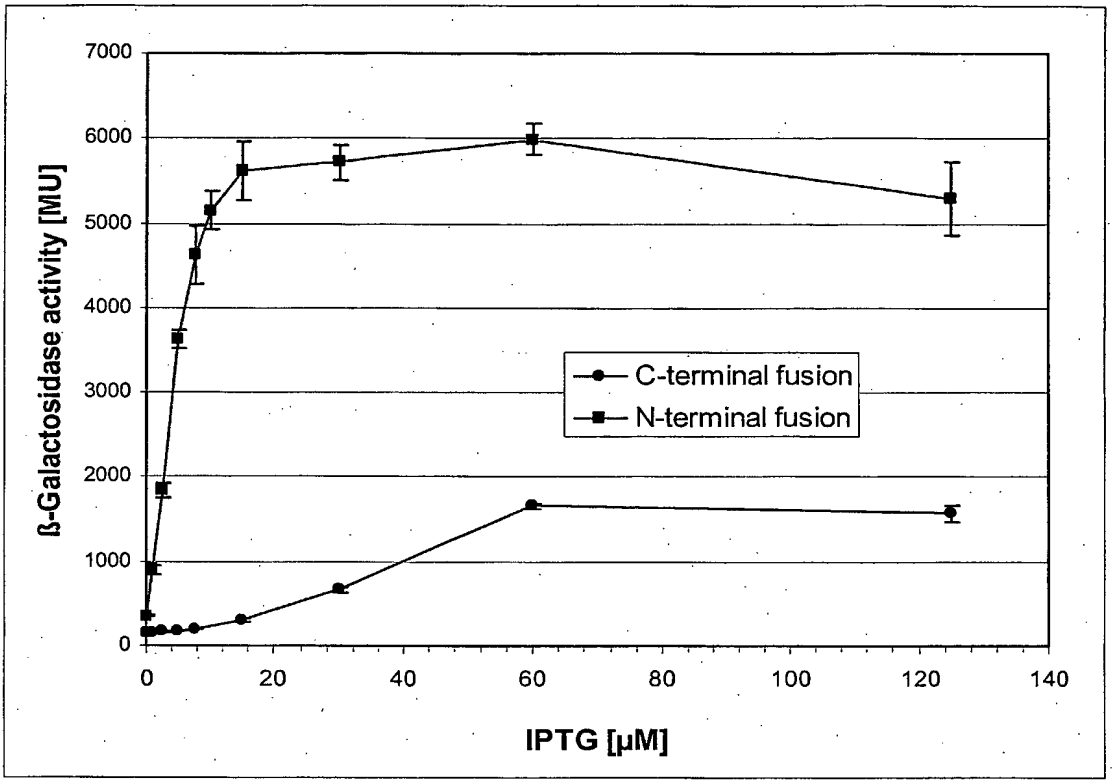


Figure 18: LacZ assay for the TetR-inducing fusion protein SbmC-pepBs1.

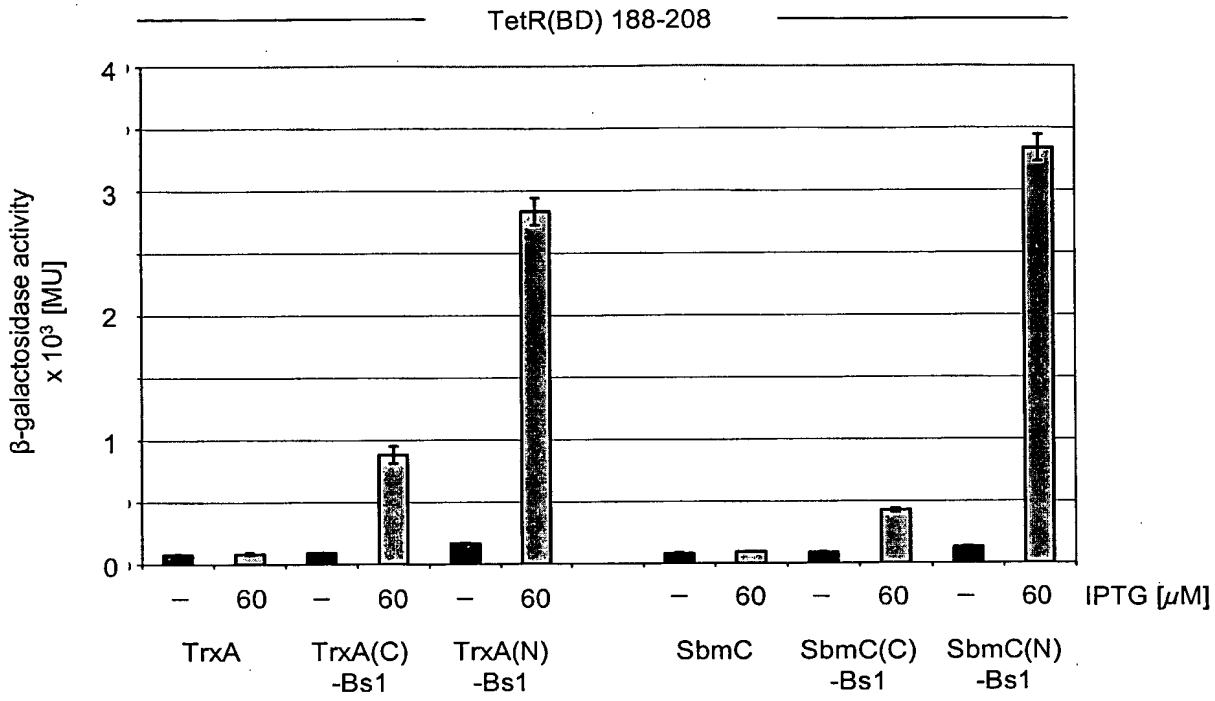


Figure 19: An in-frame fusion of an insertion element (IE^{FKS}) encoding the peptide Bs1 to TrxA leads to a protein that induces TetR(B).

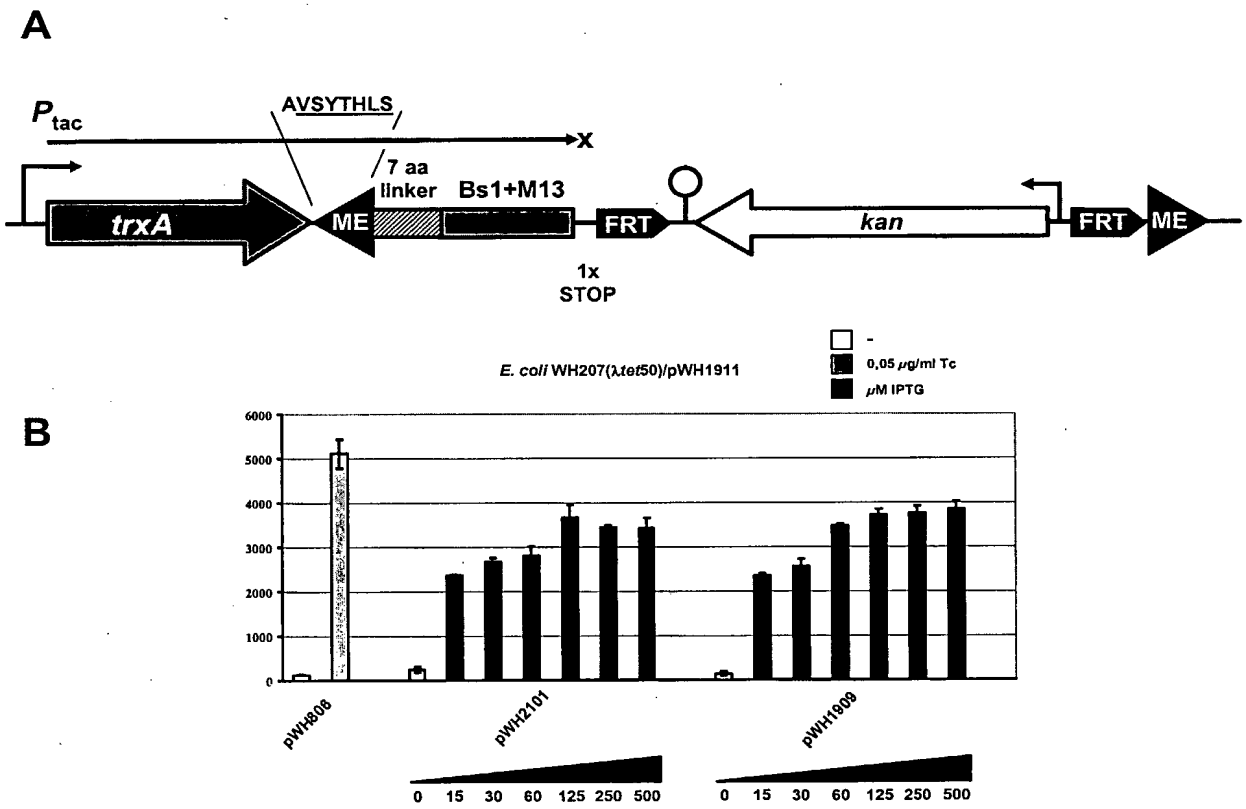


Figure 20: An in-frame fusion of the insertion element IE^{FSK} to the *atpD* ORF at its endogenous location in the *E. coli* genome leads to a protein that induces TetR(B).